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W. E. H.

An Essay

on

Bilious Fever,

by

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North carolina.

There is no subject, in the whole range of medical science, of greater importance than fever. Numerous have been the theories framed to explain the nature, and causes of this disease; but no one has been so constituted as to remain permanent. Nor has the treatment been based on much more durable principles. Whatever has a tendency to enervate the body, may be looked upon as a remote cause of fever. It often arises from great bodily fatigue, immoderate use of ardent spirits, or errors in diet. Exhalations, arising from vegetable matter in a state of putrefaction, are considered a general cause of fever. Low marshy grounds, acted on by heat, send forth exhalations; a never failing source of the disease.

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Likewise, sudden vicissitudes of the weather, as heat or cold, dryness or moisture, checked perspiration &c. give rise to the disease. It is evident, from the nature of things, that these various causes cannot be applied to all parts of the system simultaneously; nor is every part of the system equally susceptible to their influence. The modus operandi, of these deleterious impregnations of the atmosphere, are very similar. The only surfaces, to which they can be applied are, the pulmonary apparatus, and the mucous linings of the digestive tube. The olfactory nerves have been supposed, by some, to be the avenues through which these morbid impressions enter the system; but it is very improbable, since these nerves being appropriated to a peculiar

sense, can only be affected by that particular sense. Nor is it probable that these morbid agents first make their impression on the lungs, since the diseases they produce never commence with any symptom of pulmonary irritation. Whenever they are applied to a susceptible surface, they are followed by the phenomena of local irritation in the part. The primary impressions of these miasmatic exhalations, are uniformly made upon the mucous surface of the stomach, and alimentary canal, as the predominance of gastric symptoms in all fevers tend to confirm; and by consent of parts, their impression is extended to different parts of the system. We are annually visited by this most baneful of diseases; and I have

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witnessed it during the summers and autumns of 1825, and 1826, in almost every shape in which it makes its appearance; from the mildest, to the most aggravated forms of bilious fever. I think it is obvious to every one, who has been a common observer of our ordinary bills of mortality, that fever constitutes by far the most formidable outlet to human life. The fevers of our summer and autumnal months are, those generally denominated, bilious fever.

I shall arrange bilious fever, as it occurs in this section of the country, under three varieties, viz. simple or excited, inflammatory, and congestive. The simple variety is the least complicated form of the disease, in

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which the febrile excitement, or the hot stage, is completely developed: or in which there are no decided marks of topical inflammation. The stage of excitement is preceded by one of oppression, which is, itself, followed by a state of collapse. The most usual symptoms in the forming stage, or the stage of oppression, are, langour and debility; sluggishness of motion; the face becomes pale, with a dejected countenance; yawning, stretching, and an aversion to food; loss of general sensibility, and a diminution of intellectual power; a livid colour in the integuments surrounding the eyes; quick and laborious respiration; chilly sensations running over the surface, with pains in the loins and

extremities; a whitish or clammy tongue; heaviness, and frequently pain in the head; small quick struggling pulse, which is very changeable and irregular. These symptoms are accompanied with great lassitude and uneasiness. The above stage having continued for a day or two, and sometimes longer, the true nature of the disease reveals itself, by the supervening of an ague, or chill. The second stage, or the stage of excitement, now quickly ensues; in which there is a complete development of the hot stage. The temperature of the body is considerably elevated; the circulation is preternaturally increased, and the pulse becomes full, somewhat resisting, and irregular. The face becomes flushed, the lips

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parched, skin dry, thirst urgent, and there is very severe pain in the head, with throbbing of the temporal arteries. Respiration is quick and anxious, eyes dull and suffused, tongue foul, and the brain greatly disturbed, very often with delirium. Towards evening there is an exacerbation of the fever, and towards morning there is some remission. At the periods of exacerbation, the prostration of strength is greatest, though it is at all times evident; the tongue is also drier, and the bowels have a tendency to constipation the excretions and secretions undergo material changes, which are evinced by the offensive nature of the feces, by the peculiar odour of the breath and whole body,

and by the morbid appearances exhibited on the tongue. The stage of excitement, having lasted for a time, according to the mildness or severity, gives place to that of collapse, or exhaustion; which is announced by the disappearance of many of the symptoms of the preceding stage. At this crisis, should there be a favourable termination of the disease, there will be a reduction of temperature, the pulse will become slower and softer and more contracted in its volume; tongue clearer and more moist; respiration more free and natural; thirst less urgent, and the skin more relaxed and soft. The urine depositing a lateritious sediment; the fæces assuming a more healthy appearance;

and slight spasmodic pains taking place are good indications.
If, on the other hand, a fatal termination is to ensue, the prostration of strength will be greatly augmented. The pulse will become quicker and weaker; tongue darker, drier, and more foul; countenance sunken and dejected; the voice fainter, and the articulation indistinct; breathing shorter, and more anxious; and the sensorial functions will be more deranged.
In addition to the above symptoms, are, a peculiar fetor of the body; difficult deglutition, subsultus tendinum, and a low muttering delirium.
The above symptoms are only applicable to the disease, when it has run

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an unimpeded course; for when timely treated, by appropriate medicines, it will generally terminate favourably; but when neglected in the beginning, it not unfrequently proves mortal. Perhaps it is not very easy to distinguish simple excitement of the circulation from actual inflammation. The difference appears to consist, not in the general circulation, but that of particular parts. The action of the heart and arteries is, alike increased in both, but in inflammation, there is greater local accumulation of blood. However visceral enlargements do take place in some well marked cases of simple excitement. This appears to be owing to a dilitation of the

calibers of the blood vessels, unaltered by any morbid injection or organic lesion. This is known by the simple fact, that they disappear with the excitement. In the excita state the blood is pretty uniformly and equably circulated; though there are, in some cases, partial topical accumulations. In the inflammatory variety, there is considerable superabundance of blood in particular parts, with an injection of the small vessels.

The second or inflammatory variety, is much more fatal than the preceding variety. The symptoms, in the commencement of this variety of bilious fever, are so analogous to the preceding, that a description

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would be a mere repetition of what I have already said; yet it is important to observe the local affections which are connected with this variety of bilious fever. The stage of oppression lasts for a day or two, during which time there are frequent alternations of hot and cold fits. A regular chill soon ensues, differing in duration, which would last for an hour or two when reaction would ensue. The stage of excitement, being established, continues for several hours, when a slight remission is discernable; though sometimes there is no remission; the disease being formed runs its course for several days. As soon as the excitement is raised inflammation comes on;

though the most usual time for topical disease to make its appearance is, when the second stage has lasted several hours, or even a day or two. The parts that suffer most in this disease are, the brain and its meninges, the lungs and their appendages, the stomach, the liver, and spleen. The brain is more subject to inflammation than any other parts of the system.
The symptoms are, great irritability; an anxious intoxicated countenance; quick, weak, vibrating pulse; throbbing of the temporal arteries, tinnitus aurium, and redness of the eyes. There is generally constipation of the bowels, nausea, and vomiting; visual illusions and delirium;

parched tongue; faltering voice; dilitation of the pupils, vibices, discharge of dark blood from the nose or other parts; an involuntary discharge of black feculent matter; stertorous breathing, and, finally, convulsions speedily put an end to the existence of the poor sufferer. When the lungs and pleura are affected with inflamation, the symptoms are, pain in the chest a sense of constriction across the chest, laborious respiration, expansion of the alae nasi, a troublesome cough, which is frequently attended with an expectoration of phlegm streaked with blood; eyes wild, countenance indicating anxiety and alarm; a livid glow on the cheeks and lips,

and a dark foul tongue. In abdominal inflammation, the symptoms are sufficiently distinct and defined to point out the seat of inflammation; because the diseased stomach and intestines, and other affections of the abdomen, have signs so near alike, that the practitioner will frequently find it difficult to draw a line of distinction, which however is not very important in a practical point of view. For it is enough for the physician to know that inflammation does exist; it makes no difference where; we are to employ similar remedies for its removal.

When inflammation of the stomach and bowels takes place, it is generally

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denoted by tenderness of the abdomen upon pressure, slimy stools, sometimes mixed with blood; quick hurried respiration, anxious countenance, prostration of strength, small quick pulse, and the patient lies on his back with his knees drawn up. In addition to the above symptoms are, nausea, and sometimes vomiting, with a burning sensation in the stomach, and an intense desire for cold drinks.
Generally, at this time, the stomach is so irritable that the blandest liquid taken in cannot be retained.
When inflammation of the liver takes place, it is recognized by nausea, pain and soreness in the right hypochondriac region; and when the patient lies on his left side the pain is increased.

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It is likewise attended with pain in the shoulder, clay coloured stools, and the skin is generally tinged with bile.
Although I have described the inflammation of different organs seperately, they by no means present themselves at all times in that distinct form; for very often, when one part is affected, the inflammation is extended to different parts in its vicinity, and finally distant organs become implicated.
Congestive form. It will be recollected that, in the two forms of fever I have mentioned, the action of the heart and arteries was increased, but in the congestive form, of which I shall now say a few words, it was diminished. The most decided marks of distinction, between the diseases of excitement, and

congestion, are, the increased temperature of the former, and the diminished temperature of the latter. In this form of fever, the venous system appears to be more seriously implicated, but in the two preceding varieties, the arteries suffer most. In this, there is greater engorgement of the viscera, than in the two preceding forms. The organs that suffer most from engorgement are, the brain, liver, spleen, and lungs, There is always a greater or less disturbance in the balance between the arterial and venous systems; there is also greater engorgement in the veins, and less in the arteries, than in the natural state.

The loss of balance is very perceptible on the skin; there is less blood circulating

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in the extreme vessels than common, while the internal organs are greatly ingorged. The most dangerous form of congestive fever makes its attack with violence. There is greater prostration of strength, in which the mind participates with the body; soreness of the muscles, pain in the head, and extremities, alternate chills and heat, giddiness or a sense of weight in the head, pallid aspect, laborious respiration; the eyes are suffused, and sometimes red as if from a fit of intoxication, or want of sleep; at other times glairy and vacant without redness. The pulse, in the commencement, is not so much altered as might be expected, but, towards the close, it becomes more rapid.

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The tongue also, in the commencement of the first stage, is not much altered; but, in the last, it becomes encrusted of a dark brown colour; the stomach is often irritable, and the bowels are generally torpid, and contain, at this stage of the disease, dark fecal matter. The sensibility of the skin is, sometimes, so much impaired that it is with difficulty you can get blisters to act; and respiration is anxious, accompanied with sighing. If the disease is to terminate fatally, the above symptoms will be aggravated, and the patient will have oozings of blood from the mouth and nose; delirium will be increased; the pulse becom quicker and weaker, skin cold and more flaccid, and the stools

pass insensibly. The above description of the disease is of the most inveterate kind. There are milder forms of the disease, which are more tractable in their nature; differing only in degree of violence, requiring the same method of treatment; therefore I shall not give them a separate consideration. The two first forms of fever I have mentioned, so strikingly resemble each other, that I shall treat of them both at the same time. Between the mildest forms of inflammatory fever, and the worst forms of simple fever, the division is trifling, and therefore nothing more is required, in a practical point of view, than to vary our remedies according to the mildness or severity

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of the disease.

Treatment. The first I shall mention, is venesection. Nothing is more evident than that bloodletting is one of the most powerful and efficient means in reducing action. A judicious employment of it, in the commencement of the disease, when the pulse would indicate it, hardly ever failed to prevent inflammation and cut short the progress of the disease. In the employment of this remedy we must be directed by judgment, tempered by discretion. When there is high arterial action, attended with a strong full pulse, throbbing of the temporal arteries, and hot skin, we may always resort to bloodletting

with safety. When blood is taken, in sufficient quantity to make an impression on the system, it prepares the way, and facilitates the operation, of other remedies. The stomach being the seat of the disease, and most frequently affected, we are naturally led to direct our remedies to that organ. Fevers have been happily compared, by Professor Caldwell, to vegetables, the spot originally attacked being the root, on which the stem and branches depend for sustenance. Destroy or remove the root, the stem and branches necessarily wither. In cases of fever, heal in an early stage the first injury, which is the cause of all that follows, and its effects will disappear. The next, and most important remedies in the cure of bilious fever are emetics

I have employed them with decidedly better effects than any other class of remedies I have used. Emetics, and especially the antimonial emetics, have been employed, to a limited extent, in fevers, for some centuries. They were pretty extensively employed about the middle of last century; but physicians from an artificial preference, have resorted to the less effectual practice of purging. Of all emetics, tartar emetic is the best. Ipecacuanha may sometimes be combined with advantage; which gives promptness to the operation. To insure success it is necessary, in some instances, to repeat them again & again. Early exhibited, emetics will frequently arrest an attack, and, in more advanced stages, if judiciously administered and repeated sufficiently often we shall

find arterial action reduced, the temperature of the body diminished, pain in the head relieved, with a determination to the surface, which restores quietness and hastens a critical solution of the disease. There are but few cases in which emetics are not proper. Cases to which they are not adapted, are said to be a short neck, a full plethoric habit, and a predisposition to apoplexy; also the advanced stages of pregnancy.
Next in utility to emetics are purgatives. They operate by evacuating the bile and foul contents of the alimentary canal. They relieve oppression of the stomach, cleans the foul tongue, mitigate thirst, restlessness, and heat of surface.
The cathartics I usually employed and found most effectual are, calomel,

rhubarb, Jalap, castor oil, and the neutral salts. Previously to the exhibition of cathartics the lancet should be employed; as it paves the way and renders the operation more effectual. For the time of their administration we should watch for the remission of fever, and, if practicable, give them at that time; as otherwise they are apt to lie inactive on the stomach many hours. I usually gave calomel in combination with rhubarb, or Jalap; followed by a dose of castor oil, or Epsom salts. In protracted, and unrelenting cases, we should purge with calomel until dark tar like fetid stools appear. This glutinous substance is often so adhesive to the surface of the intestines, giving to it a sort of covering, over which the feces and other matters pass, and are discharged, leading us

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to suppose that the bowels are completely evacuated, when it remains undisturbed. In all cases its removal is of the utmost importance; like the removal of the incrustation of the tongue, may be received as evidence of the restoration of a healthy action of the mucous surface.

To obtain this end, I have found small and repeated doses of calomel answer better than large doses given at once. Large cathartic injections, frequently administered, are very useful in promoting the action of purgatives, and removing irritating feces. Injections of cold, by lessening heat and irritation, are often attended with very benificial results, and pleasant feelings to the patient.

For moderating excess of heat, and restoring healthy action, cold bathing is of the utmost

importance. It should not be employed unless the heat is above the natural standard of health. The safest and most advantageous time for using cold water, is when the exacerbation is at its height; which is marked by increased flushings, thirst and restlessness. Cold bathing judiciously employed, and carried to a sufficient extent, will seldom fail to moderate the symptoms, and materially contribute to a favourable termination.

Diaphoretics when well timed, and skilfully employed, are a most important and effectual class of remedies in the cure of bilious fever; but they ought never to be employed until the system is properly prepared for them by venesection, and other depletory measures. The antimonials are preferable to all others; they are mild

in their operation, and better suited to our forms of bilious fever than any others.

Tartar emetic, in minute doses, so small as not to create much nausea, is found to answer every purpose. It is not necessary we should give them in such large doses as to produce nausea; for it is not necessary to the cure of the disease.

We know that squill and tobacco, which occasion great nausea, are not productive of any diaphoresis. The antimonial preparations appear to act by a specific impression which they make on the system; subverting the morbid action going on in it, upon which the disease depends. The above remedies are generally sufficient to bring on a solution of the disease; but in some cases, where confirmed topical

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disease takes place, it is necessary to give calomel, so as to make a slight impression on the system, towards the close of fever. As the depletory measures are carried into effect, the chills will become more mild, the fever abate, and very often disappear. But sometimes, when the fever is almost subdued, and the stage of collapse is approaching, it is necessary to give cinchonine and other tonics to prevent the chills. In the third stage of the disease, it is not necessary to do much, but merely to support the patient by a generous allowance of wine and a small quantity of the mildest food. I have said nothing of the treatment in the first stage, or stage, of oppression, because I was seldom called in until it had passed. Purgatives, however,

assisted the disease to emerge, and are generally found to be very efficacious remedies.

<u>Congestive</u> form. Almost every fever has a stage of oppression however short it may be; but those only deserve to be called congestive, in which it is so great as to suppress the excitement, or render it very partial and irregular. It is in the first stage of highly congestive fever, that blood-letting is admissible, with a view of relieving local congestion, and restoring the natural balance of the circulation. Nothing is so well calculated to relieve congestion, and bring about healthy action, as the judicious employment of the lancet. In extracting blood, we should be governed by the effects produced. Sometimes a few ounces will be sufficient, at other times more will be required to relieve

ingorgement, and bring about a renewal of its motion. The actions of the heart and arteries, are so overpowered in the first instance that the blood will scarcely flow; but merely trickle from the orifice. After a few ounces are obtained in this way, it often flows more freely. Whenever the symptoms are urgent, and blood cannot very readily be extracted from the arm; it will be proper to open the temporal artery. After having drawn blood, should the pulse rise, we may repeat bloodletting; but should it become weaker, we should immediatly desist from it. The warm bath will sometimes be a very beneficial auxiliary in equalizing the circulation, and producing a determination to the surface. Friction on the surface, and warm bricks applied to the feet, ~~are very~~ beneficial in restoring the circulation. The bloodletting, warm bath, &c, should be followed

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by purgatives, and the best is calomel, either alone, or combined with Jalap or rhubarb. Very large doses will often be required, as the bowels are generally in a torpid state. The saline purgatives, aided by stimulating enemata, will be very useful in promoting a discharge. In this form of fever, there is an accumulation of offensive matter in the bowels. That they are in this condition is proved by the incrusted tongue, foul state of the fauces, and dark fetid alvine discharges. Until these actions are changed we should continue the administration of cathartics again and again. It would seem that debility would be induced from such a course of practice; but that is not the fact. On the contrary, the patient will be invigorated in proportion as this dark offensive matter is removed. Calomel independently of its removing the foul contents of the alimentary canal, is

useful, when given so as to produce a gentle ptyalism, which hardly ever fails to effect a cure in this form of the disease. The remedies I have mentioned, when properly administered, will be sufficient to cure the disease.

To prevent a relapse, our patients diet should be particularly attended to, In all the forms of fever I have mentioned, too little attention has formerly been paid, by physicians, in this part of the country, to the diet of their patients during convalescence. From inattention to this important requisition, we may not unfrequently have relapses and congestions of some of the viscera, by our patients returning to their former mode of living. Moderate exercise, in the open air, is very beneficial. The diet should be nutritive, easy of digestion, and not too stimulating.

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The farinaceous substances are supposed to be the most easy of digestion. They form a part of the nourishment of almost all nations; acquired habits then, as well as natural instincts, of the digestive system, lead to their use.

Oily and fatty substances are not proper, because they cloy the stomach, and are difficult to digest. Soups of all kinds are indigestible, and should not be used. The flesh of common fowl, partridge, and turkey may be taken. When meat is proper, from the absence of fever, beef and mutton are the best articles of diet.